Service Handbook

HP x2000 Workstation

Manufacturing Part Number: A7218-IE001
Edition E0501

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1 HP x2000 Service Information

HP x2000 Overview

Models and Accessories

Product Number[a]	Cache Memory	Std. RAM	Hard Drive	Video Controller	Multi-media	LAN
HP x2000 1.4 GHz						
A7236A	Pentium 4 with 256KB of cache memory	128 MB PC800 RDRAM ECC	40 GB Ultra ATA/100 7.2krpm	Matrox Millennium G450 16MB Dual	48x IDE CD-ROM	HP LAN PCI
HP x2000 1.5 GHz						
A7237A	Pentium 4 with 256KB of cache memory	256 MB PC800 RDRAM ECC	18 GB U160 SCSI 10krpm	Quadro2 Pro	48x IDE CD-ROM	HP LAN PCI
HP x2000 1.7 GHz						
A7238A	Pentium 4 with 256KB of cache memory	1GB PC800 RDRAM ECC	36 GB U160 SCSI 10krpm	FireGL2	48x IDE CD-ROM	HP LAN PCI

a. Unless otherwise mentioned, the operating system for the HP x2000 Workstation is Windows 2000. Windows NT is also provided on the HP Recovery CD-ROM.

x2000 Supported Accessories

Memory Upgrades

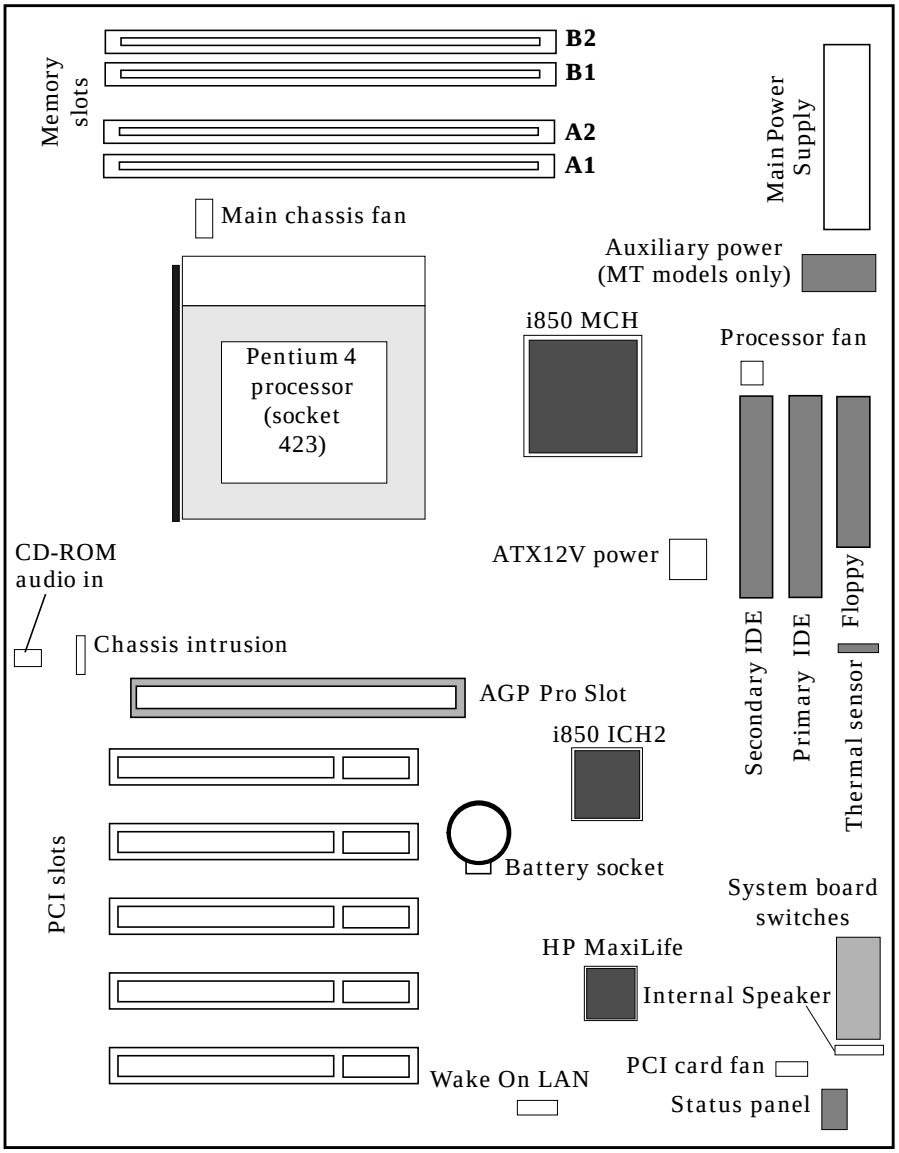
2 x 64 MB kit, PC800 ECC RDRAM main memory	A7193A
2 x 128 MB kit, PC800 ECC RDRAM main memory	A6081A
2 x 256 MB kit, PC800 ECC RDRAM main memory	A6082A
2 x 512 MB kit, PC800 ECC RDRAM main memory	A7198A

Mass Storage—Hard Disk Drives

20 GB Ultra ATA/100 hard disk 7.2k rpm	A7194A
40 GB Ultra ATA/100 hard disk, 7.2k rpm	A7195A
18 GB Ultra3 SCSI hard disk, 10k rpm	A5995B
36 GB Ultra3 SCSI hard disk, 10k rpm	A6060A

Removable Mass Storage	
12X8X32X IDE CD-Writer drive	A7212A
12X DVD drive	A7211A
Graphics Cards	
Matrox Millennium G450 dual 16MB graphics card	A7192A
nVidia Quadro2-MXR graphics card	A6064A
nVidia Quadro2-PRO graphics card	A6065A
ATI FireGL2 3D graphics card	A6076A
ATI FireGL4 3D graphics card	A7226A
Security	
HP Kensington™ lock security cable	F1645A
HP Spare master pass key	D6658B

System Board Connectors, BIOS, and Memory



System Board Switches

Default Position	Switch	Use
1-4	OFF	Reserved. Do not change Default Settings
5	ON	Reserved. Do not change Default Setting
6	ON	Enables keyboard power-on. OFF disables this option.
7	OFF	Enables normal modes. ON enables the BIOS recovery mode at next boot.
8	OFF	Retains CMOS memory. ON clears CMOS memory at next boot.
9	OFF	Enables User and System Administrator passwords. ON clears the passwords at next boot.
10	ON	ON = Minitower chassis

BIOS History

For the latest BIOS, the flasher utility program, and the BIOS history refer to the HP World Wide Web site. The BIOS is in the form `IY.W1.yy.zz`

where:

yy= BIOS version number

zz = is the selected language to be downloaded

Go to: **http://www.hp.com/workstations/support**

Main Memory

The HP x2000 has two pairs of memory sockets for installing either two or four RAMBUS Direct RAM (RDRAM) memory modules.

Each pair of memory sockets must contain identical memory modules (identical in size, speed and type). That is, sockets A1 and B1 must contain identical modules, and sockets A2 and B2 must contain identical modules (or continuity modules).

If only two RDRAM modules are installed, use the sockets marked A1 and B1. The other two sockets (A2 and B2) must contain continuity modules.

Replacing the Processor

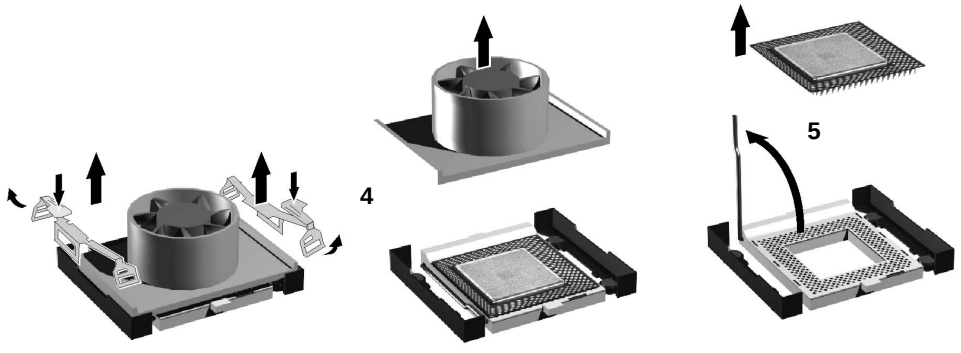
Removing the Existing Processor

1. Turn on the Workstation for 3 to 5 minutes to warm up the heatsink and processor. This will make the separation of the heatsink and the processor easier. Do not leave the Workstation on longer than 3 to 5 minutes as the heatsink may become too hot to touch. Switch off the display and Workstation.
2. Disconnect all power cables and any LAN or telecommunications cables and remove the Workstation's cover.
3. Place the Workstation on its side for better access.
4. Remove the heatsink power connector from the system board.

NOTE If the Turbo-Fan (located in the center of the heatsink) has not been working, the heatsink may be hot enough to cause burns. Wait until the heatsink has cooled a little before removing.

5. Remove the two heatsink clips (if present) then lift off the heatsink. The small amount of heat created during the 3 to 5 minute warm-up should aid in separating the heatsink from the processor.

Figure 1-1 Removing the Processor

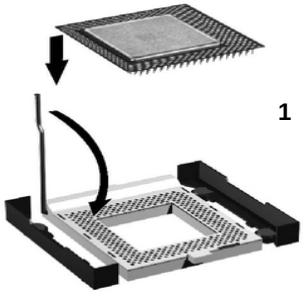


6. Open the Zero Insertion Force (ZIF) lever, located at the side of the processor socket, until it is in the vertical position (depending on the socket design, the handle may need to go past vertical), then carefully lift out the processor. To avoid bending the processor pins, keep the processor perfectly flat when removing it. See Figure 1-1.
7. Store the processor in an anti-static bag (for example, the one provided with the replacement processor).

Installing the New Processor

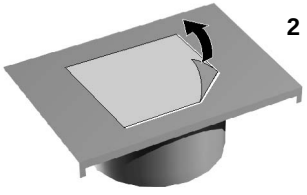
1. First ensure the processor is correctly oriented, then carefully lower the new processor into place. When the processor is fully inserted, close the ZIF lever.

Figure 1-2 Inserting the Processor



2. Carefully remove any thermal bonding material that may have remained on the underside of the heatsink.

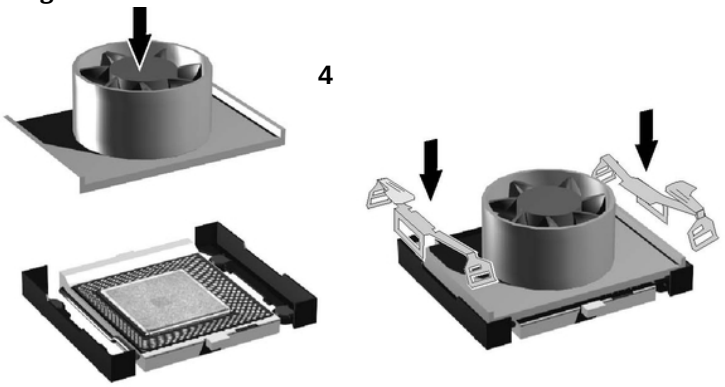
Figure 1-3 Removing the Bonding Material



3. Affix the new thermal interface material (sticker or polymer, provided with the new processor) to the top side of the new processor.
4. Attach the heatsink onto the processor. If there are retaining clips, use them to attach the heatsink. For easier access, attach the rear

retaining clip first.

Figure 1-4 Attaching the Heatsink



5. Connect the heatsink power connector to the system board.
6. Replace the Workstation's cover. Reconnect all the power and telecommunications cables.

Mass Storage Device Guide Rails

Extra guide rails are attached to the side of the front access cage for additional mass storage device installations. Depending on the device to be installed, dedicated guide rails are required and are easily recognized by their distinct size and color.

The following table indicates the device, location, and required rails.

Device to be Installed	Location	Required Rails	Installing the Rails
3.5-inch device (hard disk drive)	3.5-inch internal shelf (two shelves)	Narrow blue left and right rails	Insert the guide rail labeled “L” on the left-hand side (cable connectors facing towards you and positioned at the bottom), and the guide rail “R” on the right-hand side of the hard disk drive.
5.25-inch device (CD-ROM, etc.)	5.25-inch front access cage shelf	Wide green rails	There is no specific side to which these guides must be installed. However, they must be inserted in the two holes located at the bottom of the drive.
3.5-inch device (floppy, zip drive, etc.)		Narrow green left and right rails	Carefully break off the metal plate from the chassis. Insert the guide rail labeled “L” on the left-hand side (cable connectors facing towards you and positioned at the top), and the guide rail “R” on the right-hand side of the hard disk drive.

Parts and Part Numbers

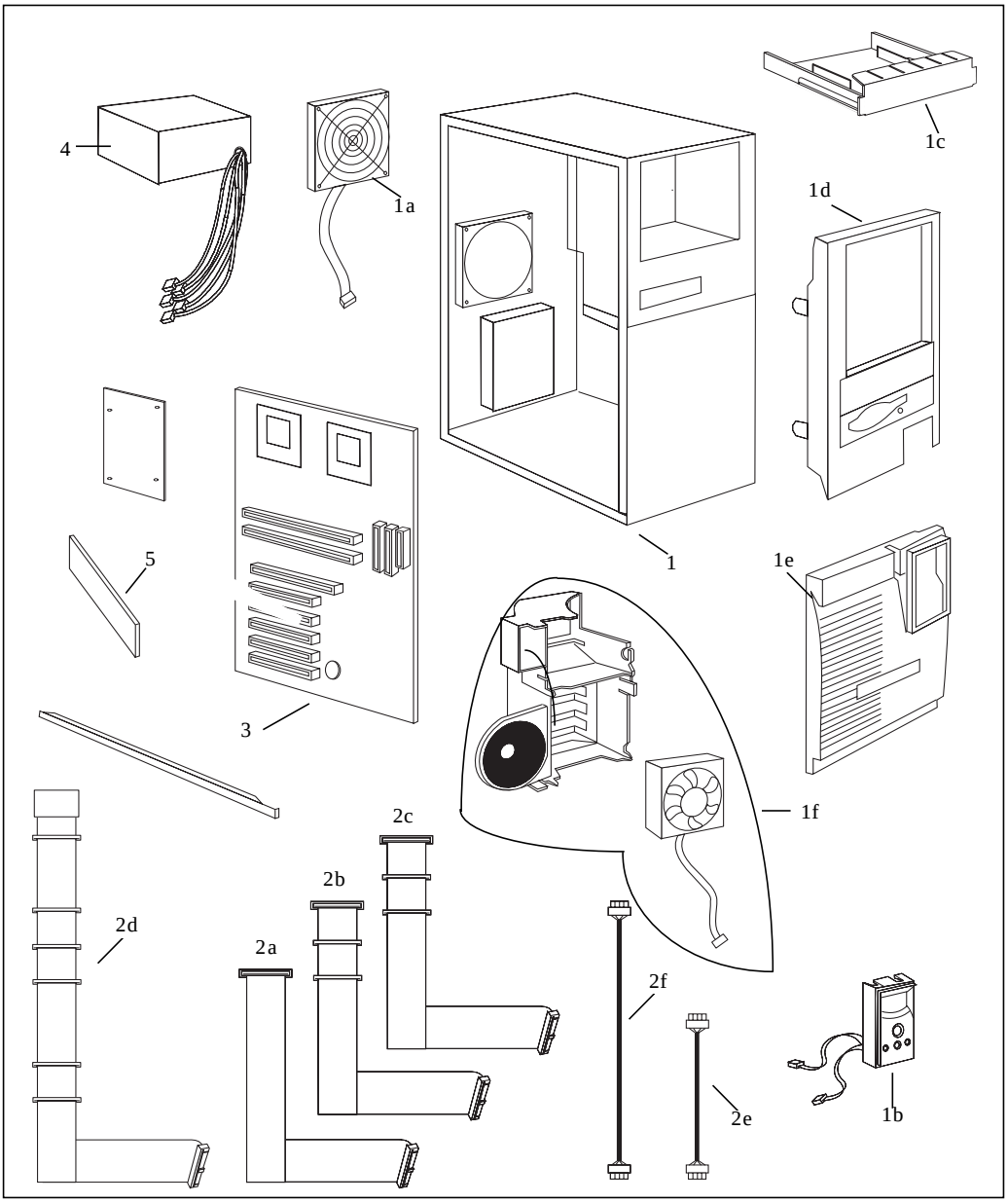


Table 1-1 Parts List

Item	Description	Replacement Part Number	Exchange Part Number
1	**Chassis assembly:**	A7218-62001	—
1a	Main fan assembly 120mm	A1280-68509	—
1b	LCD MaxiLife status panel	5064-9162	—
1c	5.25-inch to 3.5-inch HDD adapter tray	5002-6267	—
1d	Upper bezel assembly	A7218-40001	—
1e	Lower bezel assembly	A1280-64301	—
1f	Card guide assembly (includes fan & speaker)	5065-2573	—
	Support kit, including: Qty. • bumper feet 4 • cover screws 2 • anti-intrusion switch 1 • HDD thermal sensor 1 • system board bracket and screw 1 • 5 1/2-inch filler panel, 3 1/4-inch floppy panel, 31/4-inch cover filler, spare I/O panel 1		—
	Not shown in graphic:		
	Left door (cover) assembly	A1280-62402	—
	Universal AGP retainer clip	A7185-41001	—
	Cover lock assembly	5064-2645	—
2	**Cables:**		
2a	FDD IDE cable	5184-1516	—
2b	HDD IDE cable	5184-1503	—
2c	CD-ROM IDE cable	5184-3874	—
2d	SCSI cable, 5 point, U160	5184-3869	—
2e	SCSI LED cable for U160 SCSI card	5184-3868	—
2f	CD-ROM audio cable	5182-1857	—
3	System board	See system board parts list (pg. 17)	
4	Power supply unit, 492W PFC	0950-3978	—
5	RDRAM Continuity Module	D8660-63001	—
Available Parts that are not shown in the graphic on page 14.			
	Floppy disk drive (1.44)	D2035-60293	—
	Adaptec 29160 SCSI card	A1280-66502	A1280-69502

Table 1-1 Parts List

Item	Description	Replacement Part Number	Exchange Part Number
	Standard hard disk drives		
	20 GB IDE Ultra ATA/100 7.2k rpm	P1640-63001	P1640-69001
	40 GB IDE Ultra ATA/100 7.2k rpm	P1641-63001	P1641-69001
	18 GB SCSI U160 10k rpm	P1576-63001	P1576-69001
	36 GB SCSI U160 10k rpm	P1577-63001	P1577-69001
	Optical drives:		
	DVD-ROM 12X IDE drive	D4388-61004	D4388-69004
	CD-ROM 48X IDE drive	D4389-60051	—
	CD-RW 12X/8X/32X Drive	C4502-56000	
	Graphics cards & cables:		
	Matrox Millennium G450 AGP 16MB Dual nVidia Quadro2 Pro nVidia Quadro2 MXR FireGL 2 FireGL 4	5065-3897 A6065-66510 A6064-60001 A6076-66510 A7226-60001	P2062-69501 A6065-69510 A6064-69001 A6076-69510 A7226-69001
	HP LAN Tan II	5184-4725	—
	Input Devices: Enhanced mouse with scroll/zoom wheel	C4736-60101	—
	Power cord	8120-xxxx	—
	Keyboards:		
	US English keyboard Canadian French keyboard German keyboard Spanish keyboard French keyboard Latin Spanish keyboard Swiss keyboard Swedish keyboard UK English keyboard Italian keyboard Korean keyboard Taiwanese keyboard Japanese keyboard Thai keyboard Euro English keyboard	C4742-60101 C4742-60102 C4742-60103 C4742-60104 C4742-60105 C4742-60108 C4742-60111 C4742-60112 C4742-60113 C4742-60117 C4742-60121 C4742-60123 C4742-60124 C4742-60132 C4742-60142	
	CR2032 battery (3V)	1420-0356	—

Table 1-2 System Board

Description	Replacement Part No.	Exchange Part No.
System board:		
x2000 system board	A7218-66510	A7218-69510
Processors (Socket):		
Intel Pentium 4, 1.4 GHz	P2136-63001	P2136-69001
Intel Pentium 4, 1.5 GHz	P2137-63001	P2137-69001
Intel Pentium 4, 1.7 GHz	A7225-60001	A7225-69001
Pentium 4 active heatsink	P2136-63101	—
Heatsink retainer clip	1205-1290	—
Thermal interface tape	A6068-40009	—
Main memory modules		
2 x 64 MB kit, PC800 ECC RDRAM	5065-0497	D9518-69001
2 x 128 MB kit, PC800 ECC RDRAM	5065-0496	D9519-69001
2 x 256 MB kit, PC800 ECC RDRAM	5065-0495	D9520-69001
2 x 512 MB kit, PC800 ECC RDRAM	P2143-63001	P2143-69001

Table 1-3 Manuals and Documentation

Description	Part Number	Comments
Getting Started Guide		Paper document only
English	A7218-90000	
Japanese	A7218-90002	
Accessory Installation Guide		Paper document only
English	A7218-90010	
Japanese	A7218-90020	
Technical Reference Manual		electronic file only
Online documentation (electronic files) can be downloaded from: **`http://www.hp.com/workstations/support`**		

Table 1-4 Recovery CDs

Recovery CDs		—
English US (ABA kit)	A7218-95001	
German (ABD kit)	A7218-95002	
French (ABF kit)	A7218-95003	
Japanese (ABJ kit)	A7218-95004	
English UK (ABU kit)	A7218-95005	
English Europe (ABB kit)	A7218-95006	
Taiwanese (ABO kit)	A7218-95007	
Korean (AB1 kit)	A7218-95008	
Chinese (AB2 kit)	A7218-95009	
Canadian French (ABC kit)	A7218-95010	
Spain Spanish (ABE kit)	A7218-95011	
Latin Amer. Spanish (ABM kit)	A7218-95012	
Swiss German (ABP kit)	A7218-95013	
Swiss French (ABQ kit)	A7218-95014	
Swiss (ABS kit)	A7218-95015	
Finnish (ABX kit)	A7218-95016	
Italian (ABZ kit)	A7218-95017	
Thailand/Eng. (AKL kit)	A7218-95018	
Training CD	A7218-93000	—